Employee Treatment, Labor Investment Efficiency and Firm Performance

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Abstract

We investigate the link between employee treatment, labor investment efficiency and firm performance. Using a sample of 20,583 US firm-year observations, based on 2,680 firms from 1995 to 2015, we show that firms with better employee treatment have higher labor investment efficiency, productivity and profitability. Our results are primarily driven by employee treatment concerns, rather than strengths, and we also show that labor investment efficiency is positively associated with firm productivity and profitability. We find that other elements of corporate social responsibility, beyond employee treatment, are not associated with labor investment efficiency and are not reliably associated with performance. This placebo test supports our findings and is inconsistent with CSR in general being impacted by reverse causality or omitted correlated variables. Our results are economically as well as statistically significant. We estimate that firms with non-typical employee treatment experience a 10 percent impact on net employment change and half a percent impact on return on assets.

Keywords: Employee Treatment; Labor Investment Efficiency; Firm Performance.

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1. Introduction

A firm's employees can be seen as either their most important asset or cost. The commitment, efficiency and creativity of the workforce may determine the firm's growth opportunities but also its operating profit margins. Within our sample, we estimate total staff costs as averaging 34 percent of revenues. This varies widely and for those firms that are labor intensive it is obvious that employment costs are crucial to their profitability, but it could also be argued that for firms with high productivity the impact of the relatively small labor force would be geared up. In this context, human capital intensity becomes ambiguous. Human capital matters because it impacts on operating margins, or because a few employees determine the growth potential of the firm. This is underlined by the annual corporate spend on the workforce which we estimate as twelve times the investment in capital assets. It is interesting that studies of investment efficiency have traditionally seen investment as capital expenditure. Whilst labor costs are recurring, rather than sporadic, for most firms the investment in labor dwarfs that in conventional assets.

This paper investigates the impact of employee treatment policies on firms' labor investment efficiency. We also address the economic implication of employee treatment and abnormal net hiring on firms' value creation by investigating the impact of employee treatment and labor investment efficiency on labor productivity and profitability. In light of previous literature suggesting that employee-friendly policies can positively influence value creation, we argue that firms treating their employees well enjoy higher labor productivity and profitability and abnormal hiring also damages a firms' productivity and profitability.

Prior studies suggest that labor-friendly corporate practices are positively associated with better firm performance (Edmans, 2011, 2012; Ertugrul, 2013; Faleye and Trahan, 2011) and evidence how employee treatment can influence innovation, financial policies and capital structure decisions (Bae et al. 2011; Chemmanur et al., 2013; Chen et al. 2016; Ghaly et al., 2015; Serfling, 2016). As yet, however, little is known about the impact of employee treatment on firms' employment decisions, in particular those on labor investment efficiency, and consequently on productivity. In particular, finance research has long shown that agency conflicts and information asymmetry between managers and outsiders lead firms to undertake suboptimal levels of investment. A number of recent studies have explored the factors that can mitigate such market imperfections and improve investment efficiency (Biddle and Hilary, 2006; Biddle et

al.2009; Healy and Palepu, 2001; Lambert et al. 2007). We develop this line of research by extending capital investment efficiency to investment efficiency in labor, a crucial factor of production that has been largely overlooked by previous literature.

We propose that better employee treatment lowers information asymmetry and employee adverse behavior, which helps firms to maintain net hiring that is closer to a level justified by their underlying economics and thus reduce labor adjustment costs. An examination of the relationship between employee treatment and labor investment efficiency is particularly interesting in this context for two reasons. Firstly, in competitive labor markets effective management of human capital is crucial to success. Recent studies have increasingly paid attention to the influence of employee treatment on firms' capital structure decisions and financial policies (Bae et al., 2011; Chemmanur et al., 2013; Chen et al., 2016; Ghaly et al., 2015; Serfling, 2016). Secondly, Benlemlih and Bitar (2015) provide evidence that owing to low information asymmetry and high stakeholder solidarity a firm's social performance can positively contribute to its investment efficiency. The classical view considers labor as a variable factor that does not involve any adjustment costs and therefore the financing imperfections caused by information asymmetry are irrelevant for employment decisions. However, labor frictions exist and the associated costs can be substantial (Danthine and Donaldson, 2002; Diamond, 1982; Mortensen and Pissarides, 1994; Yashiv, 2007).

In order to examine the relation between employee treatment and labor investment efficiency, we follow previous studies (Pinnuck and Lillis, 2007; Jung et al. 2014) and use firms' net hiring (percentage change in the number of employees) to proxy for investment in labor. For our initial analyses, the expected level of net hiring is based on the model of Pinnuck and Lillis (2007), which includes economic variables that explain normal hiring practices such as sales growth, liquidity, leverage, and profitability. This measure of abnormal net hiring captures the amount of net hiring not attributable to underlying economic factors. Our employee treatment measure is obtained from MSCI ESG Research, formerly known as KLD. The KLD database has been extensively employed in previous studies of employee welfare (Bae et al., 2011; Cronqvist et al., 2009; Ertugrul, 2013; Faleye and Trahan, 2011; Ghaly et al., 2015; Verwijmeren and Derwall, 2010). Our measure uses KLD's *'Employee Relations'* metrics and we sum identified strengths less concerns in a given year (Faleye and Trahan, 2011; Verwijmeren and Derwall, 2010). Following Ertugrul (2013) and Ghaly et al. (2015), we also include the *'Work/Life Benefits'* variable from the *'Diversity'* dimension.

Our results are consistent with employee treatment improving investment efficiency in labor and appear to be driven more strongly by concerns than by strengths. This result is robust to various sensitivity tests and controls. As well as being statistically significant our results are consistent with 10 percent of the variation in abnormal investment in employment being driven by employee treatment practices. We also find that employee treatment directly impacts on labor productivity and profitability, as does abnormal investment in employment. Again, this would appear to be economically, as well as statistically, significant. Our results suggest that a firm which has net concerns or strengths of one could expect a variation in return on assets of half a percentage point, and abnormal investment in labor further impacts on return on assets. As our data suggests that approximately a third of firms' costs are employment related, it is no surprise then that the treatment of employees is strongly associated with performance.

As with most studies of CSR it is difficult to prove causality in the absence of an exogenous shock. It could be argued that good economic performance provides the resources for management to treat their employees well, rather than employee treatment generating good performance. It could also be that an omitted variable, for example management competence or strategic position, influences both employee treatment and performance. We have minimized the impact of these concerns by using a variety of estimation methods, not least using firm fixed effects to mitigate the impact of firm-specific omitted variables. However, we gain most confidence from our placebo test. If performance, management competence and/or strategic advantage provide the basis for good employee treatment, why would they not similarly lead to high standards in other dimensions of corporate social responsibility? Our tests suggest that they do not, leaving employee treatment as the best indicator of abnormal investment in labor, productivity and profitability.

We contribute to the literature in two ways. Firstly, this study focuses on employee treatment and emphasizes investment efficiency in labor rather than capital. Hence, we contribute to relevant literature by extending capital investment efficiency to labor investment efficiency. Secondly, Servaes and Tamayo (2013) argue that the employee element of CSR can be a fruitful area for empirical research. Our study specifically investigates one part of CSR, employee treatment, and its impact on labor investment efficiency and productivity and profitability and further abnormal net hiring negatively affects employee productivity.

Hence our study extends the recent literature by addressing the economic implication of employee treatment and labor investment efficiency for firms' value creation.

2. Literature review and hypothesis

2.1 Market frictions and capital investment efficiency

In the frictionless capital market of Modigliani and Miller (1958) firms invest until the marginal benefit of capital investment equals the marginal costs, investing in all projects with positive net present value and none with negative net present value. In practice, however, firms face capital market imperfections stemming from information asymmetry and may either over- or under- invest (Stein, 2003).

Previous literature has identified moral hazard and adverse selection as the two primary imperfections in the market that make firms depart from the optimal investment level. Moral hazard may lead to managers pursuing self-serving objectives to maximize their own personal welfare and invest in projects that are not in line with shareholder maximization (Jensen and Meckling, 1976). This can contribute to either over- or underinvestment depending on the availability of capital. Overinvestments are more likely to occur if firms have resources to invest. In that case, managers have incentives to consume resources and engage in empire building (Jensen, 1986; Richardson, 2006). Conversely, underinvestment occurs when capital is rationed, or managers shirk so that projects with positive net present value are neglected (Bertrand and Mullainathan, 2003; Lambert et al., 2007). Adverse selection stems from information asymmetry between managers and suppliers of capital, which may also affect the efficiency of capital investment. If managers are better informed about the value of firms' securities than investors, they are more likely to time capital issuance in order to issue overpriced securities (Baker et al, 2003). However, investors may respond to their information disadvantage by discounting newly issued securities and charging a higher cost of capital. If managers are reluctant to raise funds at a discounted price, projects with positive NPV will be missed and underinvestment occurs (Myers and Majluf, 1984). Traditionally this analysis is considered relevant to capital investment and capital transfers. We believe it can be extended to investment in employees.

2.2 Employee treatment and labor investment efficiency

Recent studies have paid attention to firm employee treatment schemes and their relevance to firm performance. They find that better employee treatment schemes are usually associated with better performance (Edmans, 2011, 2012; Ertugrul, 2013; Faleye and Trahan, 2011). For example, Edmans (2011) contends that firms with satisfied employees exhibit more positive earnings surprises, announcement returns, and long-term stock returns and Chen et al. (2016) find that firms treating their employees well produce more and better patents. This suggests that better employee treatment schemes are in line with benefits to shareholders. Other studies examine the impact of employee treatment on firms' capital structure decisions and financial policies. Several papers test Titman's (1984) predictions by studying the relationship between leverage and employee treatment. Chemmanur et al. (2013) find that leverage has a positive and significant influence on average employee pay, and that the incremental total labor expenses associated with an increase in leverage offset the incremental tax benefits of debt. This supports the theoretical prediction that labor costs constrain the use of debt. Similarly, Bae et al. (2011) report that firms treating their employees well maintain low debt ratios and suggest that firms' incentives to treat their employees well is an important determinant of their financing policies. In addition, Serfling (2016) finds that firms adopting state-level labor protection laws that exogenously increase employee firing costs reduce their debt ratios. Prior studies also suggest that firms with better employee treatment schemes, and operating in industries with a higher share of skilled workers, tend to hold larger cash balances (Ghaly et al, 2015; Ghaly et al, 2017). In general, corporate social responsibility, of which employee welfare and treatment is an integral part, has been found to reduce information asymmetry (Dhaliwal et al, 2011; Cho et al, 2013) and analyst forecast error (Dhaliwal et al, 2012), and to increase financial reporting quality (Kim et al, 2012) and investment efficiency (Benlemlih and Bitar, 2015).

These studies focus on employee treatment's impact on capital structure, financial policy and investment decisions. However, Jung et al. (2014) focuses on the impact on employees by investigating the impact of financial reporting quality on labor investment efficiency and find that high-quality financial reporting improves investment efficiency in labor. Our study focuses on the impact of employee treatment on investment in employees, concentrating on abnormal hiring. We argue that the relation between employee treatment and firms' net hiring stems from two potential sources, information asymmetry and employee governance.

Information asymmetry and labor investment efficiency.

One possible explanation for the connection between employee treatment and firms' net hiring can stem from information asymmetry. The classical view considers labor as a variable factor that does not involve significant adjustment and financing costs. However, labor economists find that labor frictions arise from search and matching (Diamond, 1982; Mortensen and Pissarides, 1994), direct wage costs (Danthine and Donaldson, 2002) and hiring and firing costs (Yashiv, 2007). Further, recruiting, training, firing and disruption costs suggest that adjusting labor stock for firms is a long way from costless and such costs can be substantial (Farmer, 1985; Hamermesh, 1993). As firms become more human-capital-intensive, management of human resources is likely to become increasingly important (Turban and Greening, 1997; Zingales, 2000).

Stakeholder theory (Cornell and Shapiro, 1987) suggests that financial stakeholders are more likely to increase costly explicit claims if they doubt a firm's ability to honor its implicit claims to non-financial stakeholders (Cornell and Shapiro, 1987; Maksimovic and Titman, 1991). Zingales (2000, p. 1634) argues: *"Once we recognize the existence of implicit contracts, then there are other residual claimants besides equity holders who may need to be protected. It then becomes unclear whether control should reside in the hands of shareholders, because the pursuit of shareholder's value maximization may lead to inefficient action, such as the breach of value implicit contracts"* From a human resource perspective, a firm's failure to achieve good employee relations can lead to low employee morale and high employee turnover, which can ultimately erode their reputation in the labor market. Stuebs and Sun (2010) find that corporate reputation is associated with improved labor efficiency and productivity and therefore has important implications for corporate social activities and initiatives. Conversely, poor employee relations is expected to make non-financial stakeholders doubt the firm's ability to honor their implicit claims and lead to a reduction in the value of implicit claims to new stakeholders, resulting in a reduction in future cash flows and the value of the firm (Bowen et al, 1995; Cornell and Shapiro, 1987). Prior studies find that firms having harmonious relations with their stakeholders enjoy higher value of implicit claims to its stakeholders and its future cash flows and firm value are less likely to be adversely affected by unsatisfied non-financial stakeholders, thus leading to lower financing costs (Cheng et al. 2014; Dhaliwal et al. 2011; El Ghoul et al, 2011). In this respect, employee-friendly treatment conveys additional information to the market about a firm's ability to honor implicit claims, which ultimately helps to reduce

adverse selection problems and lower the information asymmetry between corporate managers and market participants that creates market friction.

The human capital theory of corporate governance emphasizes the importance of shifting from the classical agency problem between manager and shareholder to examine human capital treatment for corporate governance (Rajan and Zingales, 1998, 2000; Zingales, 2000). For instance, Guo et al. (2015) find that employee treatment policies are an important predictor of ineffective internal control and firms with employee-friendly policies enjoy significantly lower propensity for employee-related material weaknesses. By aligning the interest between firms and their employees, firms with employee-friendly treatment mitigate moral hazard problems by enabling more effective internal monitoring, thus contributing to lower information asymmetry.

Employee governance, labor investment efficiency and productivity.

A second potential mechanism by which employee treatment can affect net hiring stems from employee governance. Previous literature shows that employment contracts are generally incomplete because it is too costly to specify all aspect of labor performance (Demski and Feltham, 1978; Klein, 1980). Divergence also exists among different groups in society regarding employee monitoring since each group has its own rationale for or against employee monitoring whether it be economic, legal or ethical (Martin and Freeman, 2003). Consequently, firms face various adverse behavior situations where the interests of employees and the firm are misaligned, and employees' motivation and effort are imperfectly observed (Flammer and Luo, 2017).

Examples of adverse employee behavior include counterproductive and disengaged behavior, such as shirking responsibilities, on-the-job searches for better jobs and using company resources for personal business. Flammer and Luo (2017) suggest that if employees perceive their current job to be superior to their alternatives, they are less likely to engage in adverse behavior. One way to lower the attractiveness of alternative options and mitigate adverse behavior is to align employees and their firms' interests. Akerlof (1982) and Akerlof and Yellen (1986, 1990) suggest that the reciprocity in the gift exchange model makes employees invest more effort in work because they treat the benefits from their firms as a gift and are assumed to respond to the benefits by making greater effort. Moreover, employee-friendly treatment aligns the interests between employees and their firms, which makes employees more likely to perceive their

current employment special and hence mitigates employee adverse behavior (Organ, 1997; Shapiro and Stiglitz, 1984; Akerlof and Yellen, 1986).

Hnece, in addition to financial employee treatment, Flammer and Luo (2017) find that relationship-based incentives such as CSR can be used as employee governance tools. These encourage nurturing and constraining mechanisms that facilitate alignment of interests between employees and their firms, lower the attractiveness of alternative options and diminish information asymmetry. We argue that employee-friendly treatment mitigates employees' adverse behavior. Firms with employee-friendly treatment may therefore suffer less unexpected employment changes and perform better.

We firstly hypothesize that employee-friendly treatment schemes enable firms to maintain employment levels close to that justified by their underlying economics. Consequently, we expect a firm's employee treatment to be negatively associated with labor investment inefficiency:

Hypothesis 1: Employee treatment is negatively associated with labor investment inefficiency.

We also examine the impact of employee treatment and abnormal net hiring on firm productivity. Prior studies show that CSR, including employee-friendly practices, can facilitate higher labor productivity (Faleye and Trahan, 2011; Sun and Stuebs, 2013; Sanchez and Benito-Hernandez, 2015; Hasan et al, 2016). For instance, Sanchez and Benito-Hernandez (2015) find that firms' social involvements in internal aspects of the company contribute to a short-term increase in labor productivity. Faleye and Trahan (2011) also argue that top executives derive no pecuniary benefits from labor-friendly practices but suggest that genuine concern for employees facilitates higher productivity and profitability. We propose that one of the channels via which employee treatment and labor investment efficiency can affect value creation is via labor productivity and therefore examine the impact of employee treatment and abnormal net hiring on labor productivity. Given that previous literature suggests that employee-friendly policies can positively influence value creation, we argue that firms treating their employees well may enjoy higher labor productivity. Further, abnormal net hiring suggests a deviation from the employment level justified by underlying economics and signals inefficient labor investment and we predict that abnormal net hiring has negative impact on a firm's employee productivity. Therefore, we hypothesize that there is a positive relation between employee treatment and labor productivity and a negative relation between abnormal net hiring and labor productivity:

Hypothesis 2: Employee treatment is positively associated with employee productivity whereas labor investment inefficiency is negatively associated with employee productivity.

3. Research design

We estimate the impact of employee treatment on the absolute value of abnormal net hiring and the impact of both employee treatment and abnormal net hiring on various measures of productivity. Our primary analysis is based on a panel data-set with fixed effects for firm and year. Prior research has typically used industry and year fixed effects to test the the association between test and outcome variables. For our sample this produces somewhat higher coefficients and statistical significance than a firm fixed effects model. However, it is unclear whether the direction of causality is as hypothesized or whether correlated omitted variables are influencing the results. The problem can be easily seen from our sample descriptive statistics. From the turn of the century our sample size increases, abnormal investment also increases and the employee treatment metric declines. In the absence of firm fixed effects this would tend to produce a negative correlation between employee treatment and abnormal investment. This would be reduced, but is unlikely to be eliminated, by control variables such as size. By using firm fixed effects we further mitigate, but may not eliminate, these problems.

Our sensitivity tests include alternative measures of both the independent and test variables and provide broad support for our results. We also re-estimate our main models using an instrumental variable approach, which provides some reassurance that the main results are reliable. However, we gain most confidence in our results from a placebo test. We re-estimate the main test equations using dimensions of CSR other than employee treatment. Our contention is that if reverse causality, or omitted correlated variables, caused the statistically significant association between CSR and abnormal net hiring or productivity, this could also be expected to show up as an association between the other CSR dimensions and the dependent variables. In general, we do not find this to be the case.

3.1 Sample

Our sample selection process is detailed in Table 1. The sample selection begins with all COMPUSTAT firm-years between 1991-2016 with non-negative sales and assets and non-missing historical SIC codes. We merge our data with CRSP to obtain total annual stock return and also exclude observations from financial

services (primary two-digit SIC codes between 60-69). We further delete 24,257 firm-years with insufficient data to estimate abnormal net hiring. This leaves us with 96,221 observations to estimate Model 1. After merging with the KLD database, and restricting the sample to 1995-2016, our sample consists of an unbalanced panel of 20,583 firm-year observations from 2,680 US firms. In order to test the impact of employee treatment and abnormal net hiring on employee productivity, and according to which dependent variable is under test, we exclude between 6,902 and 9,434 firm-years with insufficient data to compute Model 3, resulting in a test sample of 11,149 to 13,681 firm-years.

[Insert Table 1 near here]

3.2 Measure of labor investment efficiency

To measure labor investment, we use firms' net hiring, measured as the percentage change in the number of employees (Pinnuck and Lillis, 2007; Li, 2011). We estimate investment inefficiency as abnormal net hiring, defined as the difference between the actual change in a firm's labor force and the expected change based on economic fundamentals. Thus, following Pinnuck and Lillis (2007) and Jung et al. (2014), the absolute value of abnormal net hiring is the proxy for labor investment inefficiency. Abnormal net hiring is the absolute value of the error term from the following equation (Model 1).

$$\begin{aligned} NET\ HIRE_{it} = {} & \beta_0 + \beta_1 SALES\_G_{it-1} + \beta_2 SALES\_G_{it} + \beta_3 \Delta ROA_{it} + \beta_4 \Delta ROA_{it-1} + \beta_5 ROA_{it} \\ & + \beta_6 RETURN_{it} + \beta_7 SIZE\ P_{it} + \beta_8 LIQ_{it-1} + \beta_9 \Delta LIQ_{it-1} + \beta_{10} \Delta LIQ_{it} + \beta_{11} LEV_{it} \\ & + \beta_{12} LOSSBIN1_{it-1} + \beta_{13} LOSSBIN2_{it-1} + \beta_{14} LOSSBIN3_{it-1} \\ & + \beta_{15} LOSSBIN4_{it-1} + \beta_{16} LOSSBIN5_{it-1} + Industry + \varepsilon_{it} \end{aligned}$$

Following prior research *NET_HIRE* is the percentage change in employees; *SALES_G* is the percentage change in sale revenue; *ROA* is net income scaled by beginning of the year total assets; *RETURN* is the annual stock return; *SIZE_P* is the percentile of the log of market value of equity at the beginning of the year; *LIQ* is the ratio of cash and short-term investments plus receivables to current liabilities; *LEV* is the ratio of long-term debt to total assets at the beginning of the year; *LOSSBIN* is an indicator variables for each 0.005 interval of prior year ROA from 0 to -0.025, where in all cases i indicates the firm and t the year.

As in Pinnuck and Lillis (2007) and Jung et al. (2014), we find NET_HIRE_{it} is positively associated with sale growth ($SALES\_G_{it}$, $SALES\_G_{it-1}$), profitability (ΔROA_{it-1}, ROA_{it}), stock return ($RETURN_{it}$), firm size ($SIZE_{it-1}$), and liquidity (LIQ_{it-1}, ΔLIQ_{it-1}). I t is negatively associated with current year changes

in profitability (ΔROA_{it}) and small reported losses ($LOSSBIN_{it-1}$) variables; liquidity (ΔLIQ_{it}) and leverage (LEV_{it-1}). We report the descriptive statistics and results for Equation 1 in the Appendix.

3.3 Measure of employee treatment

In order to assess a firm's employee treatment, we use data from KLD. KLD, now MSCI ESG Research, has expanded its coverage and included CSR strengths and weaknesses for a large subset of its constituent firms. The database covers firms that comprise the Standard & Poor's (S&P) 500 and the Domini 400 Social Index up to 2000. In 2001, it further extended its coverage to firms in the Russell 1,000 Index. It includes approximately 650 firms for the period from 1991 to 2000, 1,100 firms for 2001 to 2002, and 3,000 or more firms for the period from 2003 to 2015. The database has been widely used in previous research (Deng et al, 2013; Servaes and Tamayo, 2013; Flammer, 2015; Khan et al, 2016; Lins et al, 2017). The KLD database estimates a firm's CSR performance using many sources, including company filings, government data, nongovernmental organization data, and more than 14,000 global media sources. It contains seven dimensions of CSR: community, employee relations, diversity, environment, human rights, product quality and corporate governance. It also excludes classifications firms in the 'sin' industries: alcohol, firearms, gambling, tobacco, nuclear power, and military contracting.

Following previous studies in employee treatment and welfare (Bae et al., 2011; Cronqvist et al., 2009; Ertugrul, 2013; Faleye and Trahan, 2011; Ghaly et al., 2015; Verwijmeren and Derwall, 2010) we construct our employee treatment scores using KLD's rating on *'Employee Relations'*, with a higher net score demonstrating better employee treatment performance. Our primary measure of employee treatment, *EMP_TREAT*, is estimated by adding identified strengths and subtracting identified concerns included in *'Employee Relations'* dimensions in each year (Faleye and Trahan, 2011; Verwijmeren and Derwall, 2010). The employee treatment variable contains labor-relevant components including union relations, cash profit sharing, employee involvement and retirement benefits. Following Ertugrul (2013) and Ghaly et al. (2015), we also include the *'Work/Life Benefits'* variable from the *'Diversity'* dimension.

3.4 Empirical models

Our primary analyses on the relation between employee treatment and labor investment efficiency are based on the following model (Model 2):

$$AB\_NETHIRE_{it}$$
$$= \beta_0 + \beta_1 EMP\_TREAT_{it} + \beta_2 MTB_{it-1} + \beta_3 SIZE_{it-1} + \beta_4 LIQ_{it-1} + \beta_5 LEV_{it-1}$$
$$+ \beta_6 DIVD_{it-1} + \beta_7 TANGIBLES_{it-1} + \beta_8 LOSS_{it-1} + \beta_9 LABINT_{it-1}$$
$$+ \beta_{10} SD\_CFO_{it-1} + \beta_{11} SD\_SALES_{it-1} + \beta_{12} SD\_NETHIRE_{it-1} + \beta_{13} UNION_{it-1}$$
$$+ \beta_{14} AB\_INVEST_{it} + Firm + Year + \varepsilon_{it}$$

Following prior research (Biddle and Hilary, 2006; Biddle et al., 2009; Jung et al., 2014) *AB_NETHIRE* is the absolute value of the difference between actual net hiring and the expected level measured as in Pinnuck and Lillis (2007); *EMP_TREAT* is the employee treatment score constructed from KLD database; *MTB* is the ratio of market to book value of common equity at the beginning of the year; *SIZE* is the log of market value of equity at the beginning of the year; *LIQ* is the ratio of cash and short-term investments plus receivables to current liabilities; *LEV* is the ratio of long-term debt to total assets at the beginning of the year; *DIVD* is an indicator variable equal to 1 if the firm pays dividends in the previous year, 0 otherwise; *TANGIBLES* is the ratio of property, plant and equipment to total assets at the beginning of the year; *LOSS* is an indicator variable equal to 1 if the firm reported a loss in the previous year, 0 otherwise; *LABINT* is the ratio of employees to total assets at the beginning of the year; *SD_CFO* is the standard deviation of cash flow from operation over year t-5 to t-1; *SD_SALES* is the standard deviation of sales revenue over year t-5 to t-1; *SD_NETHIRE* is the standard deviation of percentage change in employees over year t-5 to t-1; *UNION* is the industry-level rate of labor unionization for year t-1; *AB_INVEST* is the absolute value of the residual from the following model (Biddle et al. 2009) $INVEST_{it} = \beta_0 + \beta_1 SALESGROWTH_{it-1} + \varepsilon_{it}$; and i identifies the firm and t the year.

Our analyses on the impact of employee treatment and abnormal net hiring on employee productivity are based on the following model (Model 3):

$$EMP\_PRODC_{it} = \beta_0 + \beta_1 EMP\_TREAT_{it} + \beta_2 AB\_NETHIRE_{it-1} + \beta_3 SIZE_{it-1} + \beta_4 LIQ_{it-1}$$
$$+ \beta_5 LEV_{it-1} + \beta_6 MTB_{it-1} + \beta_7 TANGIBLES_{it-1} + \beta_8 AB\_INVEST_{it-1}$$
$$+ \beta_9 LOSS_{it-1} + \beta_{10} SALE\_G_{it-1} + \beta_{11} SALES\_G_{it-1} + \beta_{12} GOVERN_{it-1}$$
$$+ \beta_{13} CAPEX_{it-1} + Firm + Year + \varepsilon_{it}$$

Here EMP_PRODC_{it} is one of four indicators of performance: *SALES* is employee productivity, measured as the natural logarithm of sales divided by the number of employee; *GPROFIT* is employee productivity,

measured as the natural logarithm of sales minus cost of goods sold divided by the number of employee; *NETINCOME* is employee productivity, measured as the natural logarithm of net income divided by the number of employee; ROA is return on assets. Two additional control variables, not used in model 2, are introduced following prior research; *GOVERN* is the corporate governance scores from KLD database; and *CAPX* is the ratio of capital expenditures to total assets.

4. Results

4.1 Descriptive statistics

In order to obtain our primary measure of abnormal net hiring, we first estimate model 1. The descriptive statistics and preliminary results are reported in Appendix 2. Following Pinnuck and Lillis (2007), we winsorize all continuous variables at the 1st and 99th percentiles of their respective distribution to reduce the influence of outliers. Our descriptive statistics for the percentage change in the number of employees and other control variables are comparable to those reported in Pinnuck and Lillis (2007) and Jung et al. (2014), and our results and the sign of each variable are consistent with the results of prior studies. Our model has an adjusted R^2 of approximately 21.4 percent in comparison with 24.5 percent in Pinnuck and Lillis (2007) and 27.2 percent in Jung et al. (2014). Overall, the specification of our model is generally consistent with prior studies, and the model provides reasonable estimates for the expected level of net hiring. The absolute value of the difference between actual net hiring and the expected level is our measure of abnormal net hiring.

In panel A of Table 2, we present descriptive statistics for the variables used in models 2 and 3. The dependent variable, *AB_NETHIRE*, has a mean of 0.12 and a median of 0.08 with a standard deviation of 0.19. This is close to Jung et al. (2014) results with a mean of 0.11 and median of 0.07 with standard deviation of 0.13 for abnormal net hiring. We also divided the variable into two subsamples based on the sign of abnormal net hiring. Positive abnormal net hiring, *OVER_LABOR*, indicates that a firm's actual net hiring is greater than expected whilst *UNDER_LABOR*, indicates that actual net hiring is less than expected. Consistent with Ghaly et al. (2015), our main variable of interest, *EMP_TREAT*, ranges from -4 to 4 with a mean of -0.04 and median of 0, suggesting that the number of firms with negative employee treatment scores outweigh the number of firms with positive employee treatment scores. 17 percent of the sample

score -1, 65 percent 0 and 12 percent +1, so only 6 percent fall outside those classifications. The descriptive statistics of other control variables are generally consistent with Biddle et al. (2009) and Jung et al. (2014). For Equation 3, our descriptive statistics include employee productivity measures, *SALES*, *GPROFIT* and *NETINCOME*, all per employee, plus *ROA* and additional control variables including corporate governance ($GOVERN_{it-1}$) and capital expenditure ($CAPX_{it-1}$). In Panel B of Table 2, we report the frequency of firms in our sample by year plus the mean employee treatment and abnormal net hiring variables per year. We observe fluctuations by year caused by both changing circumstances and changing sample coverage.

In panel C of Table 2, we contrast the descriptive statistics of firms with positive, zero, and negative employee treatments. The comparison indicates that firms with employee-friendly treatment policies have lower mean abnormal net hiring (10.6%) than those with negative employee treatment (12.8%). These differences are statistically significant for both the mean and median. The differences between the productivity and profitability variables are also all statistically significant, with firms with positive employee treatment outperforming those with negative. Mean per employee sales are 5.8 vs. 5.6, per employee gross profit 4.9 vs. 4.4, and per employee net income, 3.3, vs. 2.6 and return on assets 6.2%, vs. 3.9%.

[Insert Table 2 near here]

Table 3 presents Pearson correlation coefficients for all variables in Equations 2 and 3. We find a negative and significant correlation between the employee treatment score (*EMP_TREAT*) and the level of abnormal net hiring (*AB_NETHIRE*), indicating that firms with good employee treatment practices are generally associated with a higher level of labor investment efficiency. The correlations among other variables is generally consistent with our expectations. For instance, we find firms with higher growth options, higher levels of liquidity and higher concurrent abnormal non-labor investments are more likely to have higher abnormal net hiring. However, larger firms, firms paying dividends in the past and firms with a higher level of tangibility are negatively associated with abnormal net hiring. In addition, we generally find abnormal net hiring is negatively associated with labor productivity and profitability whereas employee treatment is positively associated with labor productivity and profitability.

[Insert Table 3 near here]

4.2 The impact of employee treatment on abnormal labor investment (model 2)

Table 4 shows the relationship between employee treatment score (*EMP_TREAT*) and abnormal net hiring. Column one presents the results for the model using the absolute value of the residual, *AB_NETHIRE,* and the estimated coefficient on *EMP_TREAT* is negatively and statistically significant. We find that larger firms and firms with a higher level of tangibility exhibit more efficient labor investments, whilst those with higher level of liquidity, leverage and higher abnormal non-labor investments are more likely to suffer labor investment inefficiency.

In our sample 17% have an employee treatment score of -1 and 12% have +1. Few are more extreme. However, a departure of one from the median implies abnormal net hiring of approximately 0.6%, which, given the mean annual employment change of 6%, suggests that one in ten of the employment changes is impacted by the 29% of companies that score one concern or strength more than the median zero. This implies that employee treatment practices have an economically significant impact on employment outcomes.

In columns two and three of Table 4, we estimate our baseline model based on the subsamples of firms that exhibit overinvestment and underinvestment in labor. The results confirm that firms with better employee treatment performance tend to have less labor overinvestment but also less labor underinvestment. This validates our use, following prior research, of absolute abnormal investment as our main variable of interest. Where an outcome variable is transformed as fundamentally as we do in taking the absolute value, it is important to ensure that we are not obscuring basic differences in the effect of employee treatment on under and over labor investment. Our results suggest that the impact is stronger for overinvestment, but the difference is not statistically significant.

[Insert Table 4 near here]

4.3 Robustness tests of model 2.

In column 4 of table 4, we use the Fama-MacBeth approach to estimate our baseline regression model and also, in column 5, restrict the sample to firms with positive or negative, but not neutral, employee treatment. The results are consistent with those reported in column 1.

Prior research has also tested the sensitivity of the estimation process to alternative definitions of labor investment efficiency. Firstly, following Cella (2009), we use a firm's industry median level of net hiring as a proxy for the optimal level. Secondly, we follow Biddle et al. (2009) and estimate a firm-specific

model of labor investment as a function of sales growth and use the absolute value of the residuals as the proxy for deviations from expected investment in labor. Thirdly, we use the augmented version of Pinnuck and Lillis (2007) model and re-estimate model one with additional variables, including industry unionization rate, capital expenditure, research and development expenses, acquisition expenses, lagged value of observed labor investment and logarithm of GDP per capita. The correlations between these three alternatives and our original estimate of abnormal labor investment are high and the results from the models very similar. These results are available on request.

We also include various additional control variables that are not included in our baseline model because the data requirements lead to additional sample loss. We include governance proxies, corporate governance and institutional ownership respectively in our baseline regression because corporate governance and the influence of institutional investor may potentially affect investment policies and employee treatment. Moreover, Jung et al. (2014) find that high-quality financial reporting facilitates more efficient investments in labor and show that financial reporting quality is also one of the factors that have influential impact on labor investment efficiency. Therefore, we also use financial reporting quality as a control variable in our regression to test the robustness of our results. We use discretionary accrual as the proxy for financial reporting quality and estimate discretionary accrual by using the performance-adjusted modified Jones model suggested in Kothari, Leone, and Wasley (2005) given the less restrictive data requirements of cross-sectional version of the modified Jones model. The model for estimating discretionary accrual includes lagged return on assets (ROA_{it-1}) as a regressor to control for the effect of performance on measured discretionary accruals. We estimate the model for every industry classified by the two-digit SIC code for each year. Following previous studies, we use the absolute value of discretionary accrual as the proxy for financial reporting quality. The larger the value of the absolute value of discretionary accrual, the lower the level of financial reporting quality. The models including additional control variables yield results that are entirely consistent with those reported.

4.4 Re-estimation of model 2 using instrumental variables.

While using an extensive list of control variables that reduce the potential omitted variable bias in estimating the association between a firm's employee treatment and labor investment efficiency, we cannot rule out the possibility that the results generated from the baseline model suffer from endogeneity bias. In order to

address this concern, we use an instrumental variable estimation. First, as an instrument for employee treatment of firm *i* in year *t*, we use the average employee treatment scores of firms with headquarters located in the same state. Prior research shows that physical proximity can be an important factor for corporate policies (Pirinsky and Wang, 2010; Jiraporn et al, 2014). Thus, as an integral part of a firm's social performance, employee welfare and treatment practices are also likely to be affected by firms' geographic proximity. In order to avoid the situation where the employee treatment performance of one given firm affects the average employee treatment score of the geographically proximate firms, we require each state to contain at least ten firms for each year. In the same vein, firms operating in the same industry also tend to exhibit similar employee treatment practices and we therefore use the mean of the employee treatment score in year t of all firms belonging to firm *i* 's 2-digit SIC code as an instrument for employee treatment of firm *i* in year *t* (El Ghoul et al., 2011).

In the appendix, we report results for model 2 using instrumental variable estimation. The first column reports the first-stage equation, indicating a strong correlation between firm and both state and industry employee treatment levels. Column 3 present the results regarding the relation between employee treatment and labor investment efficiency from the second stage regression estimated using 2SLS. Similar results were generated using GMM, and LIML. The results confirm the negative and significant association between employee treatment and abnormal net hiring, which is consistent with the results generated from our baseline OLS regressions. In addition, the two instrumental variables pass both the Cragg and Donald (1993) instrument relevance test and the Sargan (1958) over-identification test.

4.5 The impact of non-labor dimensions of CSR on abnormal net hiring.

Bouslah et al. (2013) argue that the aggregate CSR measure may confound the influence of individual CSR dimensions and therefore each individual CSR dimension should be considered separately. However, our main reason for investigating the impact of dimensions of CSR other than employee treatment on abnormal net hiring is to help rule out reverse causality and omitted correlated variables as explanations for the statistically significant association we report in the previous section. If a firm characteristic, such as managerial competence or strategic advantage, impacted on abnormal hiring, or productivity, and also affected employee treatment, we might expect that characteristic to similarly effect other dimensions of CSR. If we find no effect it is conceivable, even if unlikely, that the omitted firm characteristic only impacts

on employee treatment. However, if we find an effect on other elements of CSR, where we have no clear hypothesis for an impact, it is strongly suggestive that the result for employee treatment may be driven by endogeneity.

To rule out this possibility, we test the impact of each dimension of CSR on abnormal net hiring, which potentially serves as a placebo test to indicate whether the relationship between employee treatment and abnormal net hiring associated with a firm's social performance or only with employee treatment. Five social dimensions are very different from employee treatment: environment; community; diversity; product; and human rights. However, employee relations includes the employee treatment dimensions as well as employee cash profit sharing, employee involvement, employee health and safety, human capital development, labor management relations and supply chain issues. An overlap between the results for employee treatment and employee relations is to be expected. For the other dimensions if it is reverse causality or omitted variables that drive the relationship, we should observe significant results between abnormal net hiring and social dimensions other than employee dimensions. If it is employee treatment policies that drive more efficient labor investment, we should only observe significant results between employee dimensions and labor investment efficiency.

[Insert Table 5 near here]

In Table 5, our results show that only employee-relations is significantly associated with abnormal net hiring. This is as expected given that employee relations include the employee treatment dimension. Further testing reveals that the additional elements in employee relations, not in employee treatment, are insignificant if used independently. These results are therefore consistent with the contention that it is relevant employee treatment elements of CSR that impact on abnormal net hiring and not CSR in general. They are also inconsistent with the contention that abnormal net hiring impacts on CSR, although that might be considered unlikely, or that abnormal net hiring and CSR are both caused by an omitted correlated variable such as management competence or competitive advantage.

4.6 The impact of employee treatment strengths and concerns on abnormal net hiring.

Mattingly and Berman (2006) highlight the importance of distinguishing between strengths and concerns in recent social responsibility research because they are empirically and conceptually distinct constructs and there could be compensating effects. Hence, we split the employee treatment measure into employee

treatment strengths (*EMP_STR*) and employee treatment concerns (*EMP_CON*), which allows us to observe how the components of the primary employee treatment (*EMP_TREAT*) affect firms' labor investment efficiency. Our first hypothesis is that employee treatment strengths would enhance firms' labor investment efficiency and therefore are negatively associated with abnormal net hiring, whereas employee treatment concerns pose a misalignment between the interests of employees and a firm's objective and are expected to lower a firm's labor investment efficiency. We have no theoretical reasons to predict that either strengths or concerns would be the more powerful.

Table 6 reports the impact of employee treatment strengths (*EMP_STR*) and concerns (*EMP_CON*) on overall abnormal net hiring (*AB_NETHIRE*), labor overinvestment (*OVER_LABOR*) and labor underinvestment (*UNDER_LABOR*). In the first three columns in Table 6, we only find a negative and relatively weak association between *EMP_STR* and abnormal net hiring (*AB_NETHIRE*) and overinvestment in labor (*OVER_LABOR*), which indicates that employee treatment strengths reduce labor investment inefficiency. We do not find significant results regarding overall employee treatment strengths in reducing labor underinvestment. On the other hand, we find employee treatment concerns, *EMP_CON*, is positively associated with abnormal net hiring, suggesting that firms with more employee treatment concerns suffer more labor investment inefficiency. Moreover, we find the *EMP_CON* variable is also negatively associated with underinvestment in labor (negative abnormal net hiring), which suggests that firms with more employee treatment concerns are more likely to have less actual net hiring than expected, thus leading to labor underinvestment. Overall, we find solid evidence that employee treatment concerns can distort normal labor hiring and lead to labor investment inefficiency and relatively weak evidence that employee treatment strengths effectively increase labor investment efficiency.

[Insert Table 6 near here]

4.7 The impact of employee treatment and abnormal net hiring on labor productivity

To demonstrate the economic implication of employee treatment (*EMP_TREAT*) and abnormal net hiring (*AB_NETHIRE)*, we further investigate the impact of employee treatment and abnormal net hiring on three measures of labor productivity: sales, gross profit and net profit per employee (*SALES*, *GPROFIT* and *NETINCOME)* and on profitability (*ROA*). Previous studies have investigated the link between value creation and employee-friendly treatment (Zingales, 2000; Filbeck and Preece, 2003; Edmans, 2011). We

argue that labor productivity is one of the potential channels via which employee treatment and labor investment efficiency can affect value creation and therefore examine the impact of employee treatment and abnormal net hiring on labor productivity. Given previous literature suggesting that employee-friendly policies can positively influence value creation, we argue that firms treating their employees well enjoy higher labor productivity and profitability. Additionally, because abnormal net hiring deviates from firms' employment levels justified by their underlying economics, we predict that abnormal net hiring damages labor productivity and profitability.

The results in Table 7 confirm our predictions contained in hypothesis 2. Specifically, we find the estimated coefficients on employee treatment are positive and significant when gross profit per employee (*GPROFIT*), income per employee (*NETINCOME*) and return on assets (ROA) are the dependent variables, indicating that employee-friendly treatment positively enhances labor productivity and firms' profitability. Sales per employee (SALES) is not significantly associated with employee treatment. We also find the lagged abnormal net hiring is negatively associated with labor productivity and profitability for all four dependent variables, which suggests that abnormal net hiring damages labor productivity and firms' profitability. Overall, our tests for the impact of employee treatment and abnormal net hiring on labor productivity suggest that employee-friendly treatment policies enhance labor productivity whereas sub-optimal net hiring is costly in terms of labor productivity.

[Insert Table 7 near here]

4.8 Non-labor dimensions of CSR impacts on productivity and profitability.

We further investigate the impact of each CSR dimension on labor productivity and profitability to observe whether there are specific CSR dimensions that contributes to labor productivity and profitability. In Table 8, we report the results of the tests but for the sake of brevity we only report the coefficients on CSR related variables plus abnormal net hiring. In all 24 cases we find that abnormal net hiring is negatively related to performance. This is consistent with the results reported earlier and there is no reason to expect a change. We also find that employee relations is significantly and positively associated with both net income and return on assets. As this variable incorporates employee treatment, and these results are consistent with employee treatment, this is unsurprising. Employee relations is insignificantly associated with gross profit

and sales whereas employee treatment was significantly associated with gross profit. This is consistent with the generally weaker relationship between employee relations and outcomes than employee treatment.

Excluding employee relations there are five dimensions of CSR and four outcomes. Our hypothesis is that employee treatment will be associated with performance but that other dimensions will, on balance, not be. If they were, it would raise the possibility of reverse causality or omitted correlated variables. Table 8 shows that, apart from employee relations, the coefficient on the CSR dimensions are statistically significant at the 10% level or better, in eight instances. Environment is negatively associated with sales, community negatively related with return on assets, diversity positively related with sales and negatively with ROA, product development positively related with both gross profit and net income, and human rights negatively related with return on assets. Eight statistically significant results out of 20 is clearly more than we would expect by chance but only three are positive. On balance the relationship between CSR dimensions and productivity and profitability would appear to be negative. We test the collective statistical significance of all 20 coefficients and confirms no significant difference from zero. It is surprising that productivity and profitability appear to be more often significantly associated with CSR dimensions than expected by chance, but the test confirms no overall positive relationship. The positive relationship between employee treatment and performance stands out as different from the other dimensions of CSR.

[Insert Table 8 near here]

4.9 Alternative indicators of employee treatment: Fortune's Best 100 List

Our results suggest that employee-friendly treatment policies, as indicated by KLD, are consistent with lower levels of abnormal net hiring, higher productivity and higher profitability. The KLD measure is widely available and has considerable credibility from its widespread use in research. However, some previous studies have also used *Fortune* magazine's list of the *'100 Best Companies to Work For'* (*Fortune List* hereafter) as an alternative indicator of employee treatment (Bae et al., 2011; Edmans, 2011; Faleye and Trahan, 2011; Ghaly et al., 2015; Guo et al., 2015; Chen et al., 2016). If effective, this would be a valuable alternative indicator which would provide a useful robustness test. However, the *Fortune List* is biased towards large and successful firms and so it is less effective than KLD as a general indicator of employee treatment for our sample. It also explicitly identifies firms that are good employers whereas KLD identifies both good and bad employee treatment, and our results suggest that concerns are more powerful indicators than

strengths. Given these reservations we argue that a standard firm fixed effect panel model is unlikely to be the best method of analysis and that a better contrast between the performance of the best firms to work for and others might be achieved using a propensity score matching approach. Nevertheless, to benchmark our results we have conducted fixed effects panel models using both approaches. In the first we classify all firms which are in the Fortune List anywhere in our sample period as being good firms to work for (Faleye and Trahan, 2011). This produces statistically significant results which are consistent with our results based on the KLD. However, this approach classifies large successful firms as good firms to work for, irrespective of their annual rank, and complicates controlling for firm fixed effects. For our analysis, we suspect that this approach will be subject to omitted correlated variables: most notably successful and wealthy firms can afford to treat their employees well, they will be productive and profitable and have the resources to ensure stable recruitment practices and hence low levels of abnormal investment in labor. Therefore, we use firm fixed effects and simply classify a firm as being a good firm to work for in the year in which it is listed as such and we find that the Fortune List variable is typically insignificant. This sensitivity of the results to method suggests that using the Fortune List in this way is potentially unreliable and propensity score matching should indeed be preferred.

Thus, in our propensity score matching approach we use the appropriate regression models from models 2 and 3 to estimate the propensity of a firm being included in the Fortune List in any particular year and select the control firms as the nearest neighbor (without replacement) and alternatively the nearest three neighbors (with replacement). Both methods produce treatment and control samples which are spread throughout the sample period and for which the control variables are balanced. In short, we find that the Fortune List produces results which are compatible with those based on the KLD employee treatment score. However, we caution against using the Fortune List as the basis of primary analysis except where the focus of analysis is on good employment practice, rather than good versus bad, and where the treatment and control firms are clearly comparable.

[Insert Table 9 near here]

4.10 The Effect of Employee Treatment Strengths, Concerns and Abnormal Net Hiring on Employee Productivity and Profitability

To observe how employee treatment strengths and concerns affect firms' labor productivity and profitability we divide the employee treatment measure into employee treatment strengths (*EMP_STR*) and employee treatment concerns (*EMP_CON)*. In light of previous argument, we predict that the strengths of employee treatment are more likely to enhance firms' labor productivity and profitability and therefore are positively associated with employee productivity proxies and ROA, whereas the concerns of employee treatment pose a misalignment between the interests of employees and a firm's objective and therefore tend to be negatively associated with employee productivity proxies and ROA.

In Table 12, our results show a marginal significant relationship between employee strengths and labor productivity measured as net income per employee. Overall there is little to suggest that firms with employee-friendly policies may have higher labor productivity. For other types of labor productivity and profitability measures, we do not find significant results. In contrast, when we test the impact of employee concerns on labor productivity and profitability, we find that the estimated coefficients of labor productivity as measured by gross profit per employee (*GPROFIT*) and net income per employee (*NETINCOME*) and profitability (*ROA*) are significantly negative, suggesting that firms with employee concerns are more likely to have lower labor productivity and profitability. Apart from above, our results still show that abnormal net hiring significantly lower firms' labor productivity and profitability.

[Insert Table 10 near here]

5 Conclusion

In our sample, total wages and salaries are approximately 1/3 the value of firms' revenues. This suggests that the efficiency with which labor is managed is crucial to a firm's prospects. Further, whilst CSR is important to various stakeholders, it can hardly be more important than to the employees as it impacts directly on their working lives. We argue that the case for the potential importance of employee treatment to wealth creation and corporate social responsibility is apparent. In this paper, we examine employee relevant CSR, employee treatment, and assess the impact of that treatment on firm efficiency. We investigate two related outcomes. The first, labor investment efficiency, assumes that competitive markets drive firms towards optimal recruitment policies and that divergence from that norm will tend to signal inefficiency. Whilst this is consistent with previous research into investment efficiency in general, it need

not always hold true. It is clearly feasible that apparent underinvestment in labor might result from efficient workforce management or that apparent overinvestment might be rational investment in future growth. This leads to our second focus of attention: productivity and performance. We examine whether labor investment efficiency does indeed link to productivity, and hence firm performance, and whether employee treatment directly impacts on firm performance.

We find that employee treatment is negatively associated with the absolute levels of abnormal net hiring. The better the employee treatment scores, the less likely is over or under-invest in labor, indicating better labor investment efficiency. When we analyze employee treatment strengths and concerns, we find relatively weak evidence that employee treatment strengths effectively improve labor investment efficiency, whereas we find strong evidence that employee treatment concerns distort normal labor investment, and particularly leads to labor underinvestment. Our data does not offer an opportunity to investigate this further, but it would clearly be a route for continuing research. For example, is this labor investment efficiency driven by employee decisions such as an increasing propensity to leave or a reluctance to join, by failures of the firm's human resource management, or by agency issues as argued by the investment efficiency literature? Whatever the underlying cause our results suggest that the economic impact of the inefficiency is considerable. Approximately one-third of our sample do not score a net zero (strengths minus concerns) and our results, taken at face value, imply that approximately 1 in 10 net changes in employment for this sub-sample are driven by the firm's employee treatment practices. This is clearly consistent with economic significance.

Regarding productivity and performance, we find that labor investment inefficiency, as measured by absolute abnormal hiring, is negatively related to sales, gross profit and net profit, all scaled by number of employees, and also to return on assets. Employee treatment is also positively related to the same variables except for sales per employee. Again, the result appears to be driven by employee treatment concerns rather than strengths, and again a case can be made for economic as well as statistical significance. A net strength or concern of one, which covers almost a third of the sample, indicates an impact on return on assets of half a percentage point, which contrasts with a mean of 4.4 percent. Whilst this may not be crucial to a firm's survival, this is a strong a result. It would be contentious to argue that human resource practices would make a more profound impact over a large sample of firms.

Our results are robust to a variety of sensitivity tests and continue to hold when we adopt instrumental variable estimation, alternative measures for employee treatment and labor investment efficiency as well as additional control variables. However, in a panel data setting, typical for archival research of this type, it is difficult to demonstrate causality without the benefit of an exogenous shock. We have followed previous research in the selection of sensitivity tests and we additionally decided to use firm-fixed effects, rather than the more usual industry fixed effects, as being less susceptible to endogeneity. However, we also found the use of a placebo test helpful. By replicating our analysis with a variety of CSR categories not immediately relevant to employment issues, and by demonstrating that these dimensions did not repeat the significant results of our employee treatment variable, we provide additional evidence that our results do not come from a broad range of CSR practices of which employee treatment is just an example. Hence, the often-argued criticism that CSR's association with performance is driven by reverse causality or omitted variables, such as managerial skills or strategic advantages, does not seem to apply in this case.

Taken together, our findings highlight the important role of employee treatment in contributing to firms' labor investment behavior, performance and value creation. We have no direct evidence that benign "employee treatment" as measured by KLD is valued by employees but our results are weakly consistent with that contention. Our results are more strongly consistent with the reverse case: bad employee treatment is detrimental. It is only one interpretation of our results, albeit the obvious one, but where employee treatment is below average employees appear less eager to join, more eager to leave, and less productive.

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Table 1: Sample Selection

Criteria	Firm-Year Observations
All COMPUSTAT firms for fiscal years 1991-2016 (exclude firms with negative assets, negative sales and stockholders equity and missing historical SIC codes)	290,288
Less:	
Observations in financial industries (SIC 60-69)	(70,299)
Merged with total stock returns data from CRSP	(84,907)
Missing observations to estimate abnormal net hiring in Model 1	(24,257)
Sample for estimating Model 1 (Pinnuck and Lillies, 2007)	96,221
KLD firms with non-missing value in COMPUSTAT for estimating Model 2	23,742
Less:	
Merged with dataset in Model 1 and unmatched observations	(3,159)
Sample for estimating Model 2 (Primary baseline regression)	**20,583**
Less:	
Missing observations in Model 3	(6,902)
Sample for estimating Model 3 (Productivity and Profitability regression)	13,681

Table 2, Panel A: Descriptive Statistics of Selected Variables in Model 2 and Model 3

	N	Mean	Median	Std.Dev	25th Percentile	75th Percentile
AB_NETHIREit	20,583	0.122	0.075	0.181	0.037	0.137
OVER_LABORit	6,527	0.162	0.072	0.273	0.028	0.169
UNDER_LABORit	14,056	-0.103	-0.076	0.110	-0.130	-0.040
EMP_TREATit	20,583	-0.035	0.000	0.768	0.000	0.000
MTBit-1	20,583	3.206	2.263	3.930	1.479	3.725
SIZEit-1	20,583	7.253	7.117	1.558	6.100	8.275
LIQit-1	20,583	1.870	1.240	2.063	0.770	2.136
LEVit-1	20,583	0.243	0.206	0.247	0.032	0.356
DIVDit-1	20,583	0.469	0.000	0.499	0.000	1.000
TANGIBLESit-1	20,583	0.289	0.213	0.237	0.099	0.428
LOSSit-1	20,583	0.209	0.000	0.406	0.000	0.000
LABINTit-1	20,583	0.006	0.003	0.011	0.002	0.006
SD_CFOit-1	20,583	0.053	0.037	0.058	0.022	0.062
SD_SALESit-1	20,583	0.144	0.103	0.135	0.060	0.180
SD_NETHIREit-1	20,583	0.177	0.111	0.237	0.061	0.201
UNIONit-1	20,583	0.104	0.074	0.089	0.040	0.143
INVESTit	20,583	0.108	0.084	0.171	0.046	0.120
NETINCOMEit	13,681	5.682	5.640	0.880	5.190	6.130
SALESit	13,374	4.637	4.673	1.030	4.047	5.248
GPROFITit	11,149	2.902	2.930	1.374	2.080	3.762
ROAit-1	13,627	0.044	0.054	0.127	0.017	0.097
GOVERNit-1	13,681	-0.274	0.000	0.687	-1.000	0.000
CAPXit-1	13,681	0.055	0.038	0.058	0.020	0.068

A description of the variables is provided in the appendix.

Table 2, Panel B: Mean Abnormal Net Hiring and Employee Treatment Scores by Year

Year	*N*	*AB_NETHIRE*	*EMP_TREAT*
1995	299	0.111	0.271
1996	303	0.102	0.274
1997	313	0.098	0.307
1998	323	0.120	0.390
1999	324	0.121	0.383
2000	326	0.125	0.374
2001	494	0.150	0.231
2002	642	0.103	0.106
2003	1,375	0.137	-0.149
2004	1,432	0.141	-0.235
2005	1,285	0.129	-0.270
2006	1,276	0.126	-0.313
2007	1,218	0.123	-0.286
2008	1,348	0.119	-0.279
2009	1,409	0.128	-0.238
2010	1,471	0.127	-0.011
2011	1,429	0.117	0.013
2012	1,424	0.112	0.100
2013	1,437	0.110	0.174
2014	1,333	0.112	0.140
2015	1,122	0.113	0.199

Table 2, Panel C: Descriptive Statistics by Employee-Friendly versus Non-Employee-Friendly Firms

	Employee-Friendly Firms			Neutral Firms			Non-Employee-Friendly Firms			p-value	
	N	Mean	Median	N	Mean	Median	N	Mean	Median	t-test	W-Test
Dependent Variables											
AB_NETHIREit	3,136	0.106	0.070	13,373	0.124	0.075	4,074	0.128	0.082	< 0.001	< 0.001
OVER_LABORit	911	0.133	0.061	4,479	0.168	0.076	1,136	0.172	0.071	< 0.001	< 0.001
UNDER_LABORit	2,216	-0.095	-0.074	8,954	-0.104	-0.075	2,938	-0.110	-0.085	< 0.001	< 0.001
Test Variable											
EMP_TREATit	3,136	1.275	1.000	13,373	0.000	0.000	4,074	-1.159	-1.000	< 0.001	< 0.001
Control Variables											
MTBit-1	3,136	3.823	2.653	13,373	3.154	2.219	4,074	2.904	2.167	< 0.001	< 0.001
SIZEit-1	3,136	8.286	8.355	13,373	7.034	6.903	4,074	7.179	7.072	< 0.001	< 0.001
LIQit-1	3,136	1.684	1.158	13,373	1.961	1.313	4,074	1.713	1.102	< 0.001	0.022
LEVit-1	3,136	0.239	0.210	13,373	0.239	0.195	4,074	0.261	0.231	0.511	0.004
DIVDit-1	3,136	0.598	1.000	13,373	0.431	0.000	4,074	0.496	0.000	< 0.001	< 0.001
TANGIBLESit-1	3,136	0.313	0.249	13,373	0.276	0.197	4,074	0.313	0.249	0.849	0.581
LOSSit-1	3,136	0.136	0.000	13,373	0.214	0.000	4,074	0.246	0.000	< 0.001	< 0.001
INVESTit	3,136	0.094	0.072	13,373	0.113	0.086	4,074	0.103	0.085	0.004	< 0.001
SD_CFOit-1	3,136	0.046	0.034	13,373	0.055	0.038	4,074	0.054	0.037	< 0.001	< 0.001
SD_SALESit-1	3,136	0.120	0.091	13,373	0.147	0.105	4,074	0.152	0.108	< 0.001	< 0.001
SD_NETHIREit-1	3,136	0.151	0.091	13,373	0.179	0.114	4,074	0.191	0.116	< 0.001	< 0.001
UNIONit-1	3,136	0.126	0.093	13,373	0.099	0.074	4,074	0.105	0.078	< 0.001	< 0.001
LABINTit-1	3,136	0.005	0.002	13,373	0.006	0.003	4,074	0.007	0.004	< 0.001	< 0.001
SALESit	2,253	5.819	5.763	8,774	5.684	5.652	2,654	5.560	5.507	< 0.001	< 0.001
GPROFITit	2,212	4.916	4.927	8,555	4.651	4.698	2,607	4.355	4.381	< 0.001	< 0.001
NETINCOMEit	1,939	3.302	3.384	7,093	2.885	2.915	2,117	2.590	2.624	< 0.001	< 0.001
ROAit	2,253	0.062	0.065	8,774	0.042	0.052	2,654	0.039	0.048	< 0.001	< 0.001
GOVERNANCEit-1	2,253	-0.300	0.000	8,774	-0.247	0.000	2,654	-0.342	0.000	0.031	0.034
CAPXit-1	2,253	0.057	0.042	8,774	0.054	0.035	2,654	0.057	0.043	0.884	0.810

Table 3: Correlation Matrix.

	1	2	3	4	5	6	7	8	9	10	11
1. AB_NETHIREit-1	1										
2. EMP_TREATit	-0.032***	1									
3. MTBit-1	0.023***	0.073***	1								
4. SIZEit-1	-0.108***	0.190***	0.192***	1							
5. LIQit-1	0.146***	0.009	0.051***	-0.198***	1						
6. LEVit-1	0.036***	-0.036***	-0.018***	0.108***	-0.224***	1					
7. DIVDit-1	-0.123***	0.049***	-0.013*	0.369***	-0.268***	0.046***	1				
8. TANGIBLESit-1	-0.072***	-0.013*	-0.114***	0.147***	-0.327***	0.255***	0.251***	1			
9. LOSSit-1	0.102***	-0.077***	-0.017**	-0.300***	0.161***	0.057***	-0.272***	-0.079***	1		
10. LABINTit-1	-0.038***	-0.064***	0.004	-0.100***	-0.105***	-0.087***	0.019***	0.026***	-0.067***	1	
11. INVESTit	0.332***	-0.013*	0.064***	-0.093***	0.074***	0.040***	-0.096***	-0.041***	0.088***	-0.027***	1
12. SD_CFOit-1	0.170***	-0.034***	0.159***	-0.289***	0.253***	-0.075***	-0.275***	-0.227***	0.266***	-0.036***	0.200***
13. SD_SALESit-1	0.097***	-0.064***	0.029***	-0.199***	0.002	0.001	-0.147***	-0.184***	0.087***	0.091***	0.081***
14 SD_NETHIREit-1	0.141***	-0.051***	0.000	-0.109***	0.069***	0.108***	-0.184***	-0.083***	0.133***	-0.053***	0.070***
15. UNIONit-1	-0.020	0.054***	-0.067***	0.095***	-0.026***	0.061***	0.136***	0.205***	-0.031***	-0.155***	-0.047***
16. SALESit	-0.040	0.080***	-0.024***	0.200***	-0.100***	0.097***	0.086***	0.134***	-0.074***	-0.498***	-0.009
17. GPROFITit	-0.002	0.145***	0.110***	0.191***	0.132***	0.043***	-0.040***	-0.020***	-0.010	-0.528***	0.043***
18. NETINCOMEit	0.001	0.142***	0.138***	0.281***	0.161***	0.023***	0.045***	0.075***	-0.100***	-0.460***	0.029***
19. ROAit-1	-0.149***	0.072***	0.053***	0.234***	-0.154***	-0.077***	0.189***	0.045***	-0.430***	0.086***	-0.223***
20. GOVERNANCEit-1	-0.002	0.010	-0.037***	-0.199***	0.038***	-0.027***	0.028***	0.061***	0.007	0.027***	0.011
21. CAPXit-1	-0.040***	0.059***	-0.019***	0.387***	-0.112***	0.051***	0.179***	0.233***	-0.077***	-0.064***	-0.034***

	12	13	14	15	16	17	18	19	20	21
12. SD_CFOit-1	1									
13. SD_SALESit-1	0.335***	1								
14 SD_NETHIREit-1	0.161***	0.205***	1							
15. UNIONit-1	-0.095***	-0.076***	-0.001	1						
16. SALESit	-0.019***	0.083***	-0.005	0.101***	1					
17. GPROFITit	0.104***	-0.069***	0.013*	-0.007	0.811***	1				
18. NETINCOMEit	0.103***	-0.095***	0.002	0.098***	0.708***	0.794***	1			
19. ROAit-1	-0.316***	-0.032***	-0.133***	0.013*	0.150***	0.123***	0.447***	1		
20. GOVERNANCEit-1	0.032***	-0.001	-0.016**	0.042***	-0.030***	-0.036***	-0.041***	-0.013*	1	
21. CAPXit-1	-0.099***	-0.067***	-0.042***	0.085***	0.209***	0.161***	0.175***	0.041***	-0.054***	1

This table presents the Pearson pair-wise correlation between all variables included in Equation 2 and Equation 3.
*, **, ***indicate statistical significance at the 0.10, 0.05 and 0.001 levels.

Table 4: The Effect of Employee Treatment on Abnormal Net Hiring

			OLS	***Fama-MacBeth***	***+/- SCORE***
	(1) AB_ NETHIRE	***(2) OVER_ LABOR***	***(3) UNDER_ LABOR***	***(4) AB_ NETHIRE***	***(5) AB_ NETHIRE***
EMP_TREATit	-0.00616***	-0.0131**	0.00440***	-0.00377***	-0.00693**
	(-2.98)	(-1.99)	(2.75)	(-2.91)	(-2.27)
MTBit-1	0.000293	0.00305**	0.000647	-0.000482	-0.00130*
	(0.52)	(2.58)	(1.39)	(-1.34)	(-1.69)
SIZEit-1	-0.0888***	-0.134*	0.0534**	-0.0178	-0.0750
	(-3.26)	(-1.74)	(2.48)	(-1.68)	(-1.43)
LIQit-1	0.00898***	0.0123***	-0.00217	0.0114***	0.00486
	(4.64)	(2.93)	(-1.21)	(4.13)	(1.51)
LEVit-1	0.0351***	0.0552*	-0.0562***	0.0363***	0.0353**
	(3.28)	(1.77)	(-6.97)	(5.54)	(2.13)
DIVDit-1	0.00724	0.00758	-0.00683*	-0.0147***	-0.000379
	(1.20)	(0.38)	(-1.83)	(-3.59)	(-0.04)
TANGIBLESit-1	-0.0609**	-0.0795	0.0520**	-0.00848	-0.0542
	(-2.16)	(-1.20)	(1.99)	(-1.22)	(-1.20)
LOSSit-1	-0.00356	-0.00344	-0.00710**	0.0151**	0.000421
	(-0.83)	(-0.27)	(-2.08)	(2.10)	(0.06)
LABINTit-1	-1.935**	-11.12***	-2.224***	-0.402***	-2.264**
	(-2.11)	(-3.79)	(-4.37)	(-2.94)	(-2.01)
INVESTit	0.325***	0.425***	-0.234***	0.368***	0.430***
	(5.49)	(10.43)	(-5.15)	(8.63)	(9.44)
SD_CFOit-1	0.0209	0.0301	-0.0252	0.0876***	0.0692
	(0.32)	(0.23)	(-0.47)	(1.94)	(0.67)
SD_SALESit-1	0.0132	0.0374	0.0241*	0.0704**	0.0248
	(0.68)	(0.66)	(1.69)	(2.70)	(0.68)
SD_NETHIREit-1	-0.154***	-0.302***	0.00940	0.0606***	-0.230***
	(-8.47)	(-6.86)	(1.24)	(4.65)	(-4.64)
UNIONit-1	0.0349	0.0588	0.0183	-0.00125	0.109*
	(0.89)	(0.46)	(0.63)	(-0.09)	(1.74)
Firm Fixed Effect	Yes	Yes	Yes	No	Yes
Year Fixed Effect	Yes	Yes	Yes	No	Yes
N	20,583	6,527	14,056	20,583	7,210
Adjusted R2	25.4%	31.4%	28.5%	18.0%	30.9%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 5: The Effect of CSR Dimensions on Abnormal Net Hiring

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
ENVIRONit-1	0.00123					
	(0.68)					
COMMUNit-1		-0.0000272				
		(-0.01)				
EMP_RELit-1			-0.00482***			
			(-3.18)			
DIVERSITYit-1				-0.00221		
				(-1.48)		
PRODUCTit-1					0.000668	
					(0.25)	
RIGHTSit-1						0.00124
						(0.25)
MTBit-1	0.000300	0.000297	0.000275	0.000281	0.000296	0.000298
	(0.53)	(0.53)	(0.49)	(0.50)	(0.53)	(0.53)
SIZEit-1	-0.0888***	-0.0882***	-0.0872***	-0.0860***	-0.0883***	-0.0883***
	(-3.25)	(-3.23)	(-3.20)	(-3.14)	(-3.23)	(-3.24)
LIQit-1	0.00897***	0.00899***	0.00902***	0.00897***	0.00898***	0.00898***
	(4.62)	(4.64)	(4.67)	(4.63)	(4.64)	(4.64)
LEVit-1	0.0350***	0.0351***	0.0351***	0.0352***	0.0350***	0.0351***
	(3.26)	(3.27)	(3.28)	(3.28)	(3.27)	(3.27)
DIVDit-1	0.00729	0.00727	0.00747	0.00729	0.00727	0.00730
	(1.21)	(1.20)	(1.24)	(1.21)	(1.20)	(1.21)
TANGIBLESit-1	-0.0617**	-0.0618**	-0.0603**	-0.0612**	-0.0619**	-0.0621**
	(-2.19)	(-2.18)	(-2.14)	(-2.17)	(-2.20)	(-2.21)
LOSSit-1	-0.00308	-0.00308	-0.00349	-0.00296	-0.00307	-0.00308
	(-0.72)	(-0.72)	(-0.81)	(-0.69)	(-0.72)	(-0.72)
LABINTit-1	-1.962**	-1.954**	-1.894**	-1.940**	-1.955**	-1.956**
	(-2.14)	(-2.14)	(-2.07)	(-2.12)	(-2.14)	(-2.14)
INVESTit	0.325***	0.325***	0.325***	0.325***	0.325***	0.325***
	(5.49)	(5.49)	(5.49)	(5.49)	(5.49)	(5.49)
SD_CFOit-1	0.0227	0.0228	0.0205	0.0217	0.0228	0.0227
	(0.35)	(0.35)	(0.32)	(0.33)	(0.35)	(0.35)
SD_SALESit-1	0.0138	0.0136	0.0131	0.0136	0.0136	0.0136
	(0.71)	(0.70)	(0.68)	(0.70)	(0.71)	(0.70)
SD_NETHIREit-1	-0.154***	-0.154***	-0.154***	-0.154***	-0.154***	-0.154***
	(-8.50)	(-8.51)	(-8.49)	(-8.54)	(-8.51)	(-8.51)
UNIONit-1	0.0297	0.0304	0.0330	0.0308	0.0304	0.0304
	(0.77)	(0.78)	(0.85)	(0.79)	(0.78)	(0.78)
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
N	20,583	20,583	20,583	20,583	20,583	20,583
Adjusted R2	25.4%	25.4%	25.4%	25.4%	25.4%	25.4%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 6: The Effect of Employee Treatment Strengths and Concerns on Abnormal Net Hiring, Overinvestment and Underinvestment

	(1) AB_ NET HIRE	*(2) OVER_ LABOR (+ve)*	*(3) UNDER_ LABOR (-ve)*	*(4) AB_ NET HIRE*	*(5) OVER_ LABOR (+ve)*	*(6) UNDER_ LABOR (-ve)*
EMP_STRit	-0.00463	-0.0147*	0.00168			
	(-1.59)	(-1.75)	(0.74)			
EMP_CONit				0.00615***	0.0107	-0.00673***
				(2.61)	(1.15)	(-3.28)
MTBit-1	0.000289	0.00306***	0.000656	0.000433	0.00308***	0.000638
	(0.51)	(2.59)	(1.41)	(0.99)	(2.60)	(1.37)
SIZEit-1	-0.0872***	-0.131*	0.0524**	-0.0688***	-0.136*	0.0548**
	(-3.20)	(-1.70)	(2.43)	(-3.32)	(-1.78)	(2.54)
LIQit-1	0.00898***	0.0123***	-0.00219	0.00773***	0.0124***	-0.00216
	(4.63)	(2.92)	(-1.22)	(5.75)	(2.96)	(-1.21)
LEVit-1	0.0350***	0.0549*	-0.0562***	0.0304***	0.0549*	-0.0562***
	(3.27)	(1.76)	(-6.97)	(3.70)	(1.76)	(-6.97)
DIVDit-1	0.00749	0.00812	-0.00699*	0.00717	0.00699	-0.00648*
	(1.24)	(0.40)	(-1.88)	(1.64)	(0.35)	(-1.74)
TANGIBLESit-1	-0.0607**	-0.0781	0.0523**	-0.0511**	-0.0808	0.0536**
	(-2.15)	(-1.17)	(2.00)	(-2.30)	(-1.21)	(2.05)
LOSSit-1	-0.00313	-0.00262	-0.00751**	-0.00156	-0.00334	-0.00696**
	(-0.73)	(-0.21)	(-2.20)	(-0.47)	(-0.26)	(-2.04)
LABINTit-1	-1.951**	-11.12***	-2.212***	-0.659	-11.13***	-2.230***
	(-2.13)	(-3.78)	(-4.36)	(-1.04)	(-3.79)	(-4.39)
INVESTit	0.325***	0.425***	-0.234***	0.244***	0.424***	-0.234***
	(5.49)	(10.42)	(-5.16)	(5.92)	(10.43)	(-5.16)
SD_CFOit-1	0.0232	0.0347	-0.0262	0.00403	0.0326	-0.0237
	(0.36)	(0.27)	(-0.49)	(0.08)	(0.25)	(-0.44)
SD_SALESit-1	0.0134	0.0386	0.0241*	0.000511	0.0392	0.0241*
	(0.69)	(0.68)	(1.69)	(0.03)	(0.69)	(1.69)
SD_NETHIREit-1	-0.154***	-0.302***	0.00927	-0.0917***	-0.302***	0.00945
	(-8.49)	(-6.88)	(1.22)	(-7.92)	(-6.89)	(1.25)
UNIONit-1	0.0310	0.0514	0.0213	0.0235	0.0576	0.0175
	(0.80)	(0.40)	(0.73)	(0.75)	(0.45)	(0.60)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	20,583	6,527	14,056	20,583	6,527	14,056
Adjusted R2	25.4%	31.4%	28.2%	25.2%	31.4%	28.3%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 7: The Effect of Employee Treatment and Abnormal Net Hiring on Labor Productivity

	(1) ***Net income per employee***	*(2)* ***Sales per employee***	*(3)* ***Gross profit per employee***	*(4)* ***Return on Assets***
EMP_TREATit-1	0.000815	0.0191**	0.0369***	0.00527***
	(0.13)	(2.45)	(2.59)	(3.64)
AB_NETHIREit-1	-0.116***	-0.0912***	-0.191***	-0.0340***
	(-3.87)	(-2.73)	(-3.13)	(-3.54)
SIZEit-1	0.501***	0.810***	2.622***	0.129***
	(4.67)	(7.08)	(10.94)	(5.32)
LIQit-1	-0.0317***	-0.00893	0.00903	-0.000966
	(-3.72)	(-1.41)	(0.74)	(-0.63)
LEVit-1	-0.0657**	-0.0234	-0.360***	-0.0336***
	(-2.19)	(-0.60)	(-4.40)	(-2.86)
MTBit-1	-0.000717	0.00179	0.0145***	0.00306***
	(-0.38)	(0.84)	(3.82)	(4.86)
PPEit-1	0.0391	0.140	-0.568***	-0.0235
	(0.30)	(1.01)	(-2.24)	(-1.00)
INVESTit-1	-0.269**	-0.209***	-0.382***	-0.0338*
	(-7.47)	(-6.33)	(-3.97)	(-1.89)
LOSSit-1	-0.0261**	-0.0420***	-0.318***	-0.0163***
	(-2.29)	(-2.78)	(-7.60)	(-4.29)
SALESGROWTH1it-1	0.309***	0.207***	0.435***	0.0577***
	(10.41)	(5.56)	(7.32)	(7.61)
SALESGROWTH2it-1	0.170***	0.128***	0.218***	0.0314***
	(5.42)	(4.51)	(4.28)	(5.57)
GOVERNANCEit-1	0.00542	0.0133**	-0.00811	0.00306**
	(1.06)	(2.00)	(-0.57)	(2.03)
CAPXit-1	-0.276*	-0.332	0.601	0.118***
	(-1.67)	(-1.48)	(1.52)	(2.74)
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	13,681	13,374	11,149	13,681
Adjusted R2	92.9%	92.2%	77.5%	57.8%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 8: The Effect of CSR Dimensions and Abnormal Net Hiring on Labor Productivity and Profitability

	(1) ***SALES*** ***Sales per employee***	***(2)*** ***GPROFIT*** ***Gross profit per employee***	***(3)*** ***NETINCOME*** ***Net income per employee***	***(4)*** ***ROA*** ***Return on Assets***
ENVIRONit-1	-0.0119**	-0.00329	-0.000619	-0.00136
	(-2.44)	(-0.50)	(-0.05)	(-1.29)
AB_NETHIREit-1	-0.116***	-0.0919***	-0.192***	-0.0342***
	(-3.90)	(-2.76)	(-3.14)	(-3.55)
COMMUNit-1	-0.0150*	0.00252	0.0192	-0.00326*
	(-1.77)	(0.24)	(0.98)	(-1.71)
AB_NETHIREit-1	-0.116***	-0.0918***	-0.192***	-0.0342***
	(-3.89)	(-2.75)	(-3.12)	(-3.56)
EMP_RELit-1	-0.00386	0.00764	0.0181*	0.00386***
	(-0.91)	(1.38)	(1.86)	(3.81)
AB_NETHIREit-1	-0.116***	-0.0913***	-0.191***	-0.0339***
	(-3.88)	(-2.74)	(-3.12)	(-3.53)
DIVERSITYit-1	0.00645*	-0.0001	0.00543	-0.00167*
	(1.79)	(-0.02)	(0.59)	(-1.69)
AB_NETHIREit-1	-0.115***	-0.0918***	-0.192***	-0.0343***
	(-3.86)	(-2.76)	(-3.13)	(-3.57)
PRODUCTit-1	0.0009	0.0188**	0.0382**	0.00240
	(0.06)	(2.05)	(2.14)	(1.33)
AB_NETHIREit-1	-0.116***	-0.0912***	-0.191***	-0.0341***
	(-3.87)	(-2.73)	(-3.12)	(-3.54)
RIGHTSit-1	-0.0001	0.0162	-0.0169	-0.00969***
	(-0.01)	(0.75)	(-0.51)	(-3.67)
AB_NETHIREit-1	-0.116***	-0.0921***	-0.192***	-0.0341***
	(-3.87)	(-2.77)	(-3.13)	(-3.54)
Control Variables	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
N	13,681	13,374	11,149	13,681
Adjusted R2	92.9%	92.2%	77.5%	57.8%

*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Table 9: PSM test of Fortune Best100 versus controls

Variable	Sample	Treated	Controls	Difference	T-stat	N
EMP_TREAT	Unmatched	0.933	-0.053	0.986	26.84	
	ATT	0.933	0.207	0.726	10.55***	435
ET_STRENGTH	Unmatched	1.260	0.243	1.016	36.94	
	ATT	1.260	0.579	0.680	11.10***	435
ET_CONCERN	Unmatched	0.326	0.296	0.030	1.13	
	ATT	0.326	0.372	-0.046	-1.11	435
AB_NETHIRE	Unmatched	0.088	0.123	-0.034	-3.82	
	ATT	0.088	0.105	-0.017	-1.91*	435
SALES	Unmatched	5.673	5.743	-0.070	-1.59	
	ATT	5.673	5.515	0.157	2.55***	414
GROSS PROFIT	Unmatched	3.208	2.918	0.290	4.13	
	ATT	3.208	2.962	0.246	2.63***	414
NET INCOME	Unmatched	4.862	4.708	0.154	3.01	
	ATT	4.862	4.591	0.271	3.46***	414
ROA	Unmatched	0.118	0.084	0.034	9.70	
	ATT	0.118	0.107	0.011	2.28**	414

Cases are matched using a probit regression of inclusion in of the Fortune 100 Best Firms to Work For with size, industry, leverage, market-to-book, loss dummy, and 5-year standard deviation of sales as the statistically significant variables. Treated and Controls reports the mean values for the unmatched and matched samples (designated ATT which identifies the average treatment effect on the treated). Here firms are matched by the nearest neighbor without replacement.
*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels.

Table 10: The Effect of Employee Treatment Strengths, Concerns and Abnormal Net Hiring on Employee Productivity and Profitability

	(1) ***SALES*** *Sales per employee*	*(2)* ***GPROFIT*** *Gross profit per employee*	*(3)* ***NETINCOME*** *Net income per employee*	*(4)* ***ROA*** *Return on Assets*	*(5)* ***SALES*** *Sales per employee*	*(6)* ***GPROFIT*** *Gross profit per employee*	*(7)* ***NETINCOME*** *Net income per employee*	*(8)* ***ROA*** *Return on Assets*
EMP_STRit-1	0.0100	0.0120	0.0326*	0.00206				
	(1.17)	(1.09)	(1.77)	(0.98)				
EMP_CONit-1					0.00820	-0.0250**	-0.0392**	-0.00814***
					(1.14)	(-2.49)	(-1.97)	(-4.33)
AB_NETHIREit-1	-0.116***	-0.0917***	-0.192***	-0.0342***	-0.116***	-0.0913***	-0.192***	-0.0340***
	(-3.87)	(-2.75)	(-3.13)	(-3.55)	(-3.88)	(-2.74)	(-3.13)	(-3.54)
SIZEit-1	0.498***	0.803***	2.609***	0.128***	0.497***	0.818***	2.632***	0.131***
	(4.64)	(7.02)	(10.87)	(5.27)	(4.65)	(7.14)	(10.99)	(5.41)
LIQit-1	-0.0317***	-0.00878	0.00935	-0.000947	-0.0316***	-0.00888	0.00928	-0.000965
	(-3.73)	(-1.39)	(0.76)	(-0.62)	(-3.71)	(-1.41)	(0.76)	(-0.63)
LEVit-1	-0.0657**	-0.0233	-0.360***	-0.0335***	-0.0655**	-0.0233	-0.359***	-0.0336***
	(-2.19)	(-0.60)	(-4.39)	(-2.85)	(-2.18)	(-0.60)	(-4.39)	(-2.87)
MTBit-1	-0.000706	0.00185	0.0147***	0.00307***	-0.000688	0.00175	0.0146***	0.00304***
	(-0.38)	(0.87)	(3.87)	(4.88)	(-0.37)	(0.82)	(3.83)	(4.83)
PPEit-1	0.0357	0.143	-0.567**	-0.0222	0.0396	0.148	-0.545**	-0.0216
	(0.27)	(1.04)	(-2.23)	(-0.95)	(0.30)	(1.06)	(-2.13)	(-0.92)
INVESTit-1	-0.269***	-0.209***	-0.381***	-0.0335*	-0.269***	-0.209***	-0.380***	-0.0338*
	(-7.47)	(-6.30)	(-3.97)	(-1.87)	(-7.46)	(-6.33)	(-3.97)	(-1.89)
LOSSit-1	-0.0261**	-0.0434***	-0.321***	-0.0167***	-0.0267**	-0.0417***	-0.319***	-0.0161***
	(-2.28)	(-2.87)	(-7.65)	(-4.37)	(-2.34)	(-2.76)	(-7.60)	(-4.24)
SALES_G1it-1	0.309***	0.208***	0.436***	0.0578***	0.309***	0.207***	0.435***	0.0577***
	(10.41)	(5.58)	(7.31)	(7.61)	(10.42)	(5.56)	(7.31)	(7.63)
SALES_G2it-1	0.170***	0.128***	0.219***	0.0314***	0.170***	0.127***	0.217***	0.0313***

	(5.43)	(4.50)	(4.30)	(5.58)	(5.42)	(4.46)	(4.27)	(5.56)
GOVERNit-1	0.00515	0.0134**	-0.00831	0.00314**	0.00542	0.0139**	-0.00647	0.00322**
	(1.01)	(2.02)	(-0.58)	(2.07)	(1.07)	(2.09)	(-0.45)	(2.13)
CAPXit-1	-0.275*	-0.335	0.600	0.118***	-0.277*	-0.335	0.595	0.118***
	(-1.66)	(-1.50)	(1.52)	(2.71)	(-1.68)	(-1.49)	(1.50)	(2.72)
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13,374	11,149	13,681	13,681	13,374	11,149	13,681	13,374
Adjusted R2	92.2%	77.5%	57.8%	92.9%	92.2%	77.5%	57.9%	92.2%

This table presents the results from regressing employee treatment strengths (*EMP_STR*), concerns (*EMP_CON*) and abnormal net hiring (*AB_NETHIRE*) on various per employee productivity measures (*SALES, GPROFIT and NETINCOME*) and profitability (*ROA*). *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.

Appendix 1: Description (COMPUSTAT data items in parentheses)

Model 1 Variables:	
NET_HIREit	Percentage change in the number of employees (EMP) from year t-1 to year t for firm i.
SALES_Git	Percentage change in sales (REVT) in year t for firm i.
ROAit	Return on assets (NI / lag(AT)) in year t for firm i.
⊿ROAit	Change in return on assets in year t for firm.
RETURNit	Total stock return during fiscal year t for firm i.
SIZEit-1	Natural log of market value (CSHO* PRCC_F) at the end of fiscal year t-1 for firm i.
SIZE_Pit-1	Percentile rank of *SIZEit-1*
LIQit-1	Quick ratio ((CHE + RECT) / LCT) at the end of year t -1 for firm i.
⊿LIQit-1	Percentage change in the quick ratio in year t for firm i.
LEVit-1	Leverage for firm I, measured as the sum of debt in current liabilities and total long-term debt (DLC + DLTT) at the end of year t-1, divided by year t-1 total assets.
LOSSBINit-1	There are five separate loss bins to indicate each 0.005 interval of ROA from 0 to -0.025 in period t-1 for firm i. LOSSBIN1 is equal to 1 if ROA ranges from -0.005 to 0.
Model 2 Variables:	
EMP_TREATit	Employee treatment score from KLD database.
DIVDit-1	Indicator variable coded as 1 if the firm paid dividends (DVPSPS_F) in year t-1.
TANGIBLESit-1	Property, plant and equipment (PPENT) at the end of year t-1, divided by total assets at year t-1, for firm i.
LOSSit-1	Indicator variable coded as 1 if firm I had negative ROA for year t-1.
LABINTit-1	Labor intensity, measured as the number of employees divided by total assets at the end of year t-1 for firm i.
INVESTit	Abnormal other (non-labor) investments, defined as the absolute magnitude of the residual from the following model: INVESTit = β0 + β1SALES_Git-1 + εit, where INVEST is the sum of capital expenditure (CAPX), acquisition expenditure (AQC), and research and development expenditure (XRD), less cash receipts from the sale of property, plant, and equipment (SPPE), all scaled by lagged total assets.
SD_CFOit-1	Standard deviation of firm i's cash flows from operation (OANCF) from year t-5 to t-1.
SD_SALESit-1	Standard deviation of firm i's sales from year t-5 to t-1.
SD_NETHIREit-1	Standard deviation of firm i's change in the number of employees from year t-5 to t-1.
UNIONit-1	Industry-level rate of labor unionization for year t-1.
Model 3 Variables:	
NETINCOMEit	Employee productivity, measured as the natural logarithm of net income (NI) divided by the number of employee (EMP).
SALESit	Employee productivity, measured as the natural logarithm of sales (REVT) divided by the number of employee (EMP).
GPROFITit	Employee productivity, measured as the natural logarithm of sales (REVT) minus cost of goods sold (COGS) divided by the number of employee (EMP).
HERFDit-1	Herfindahl-Hirschman Index (3-digit SIC) based on firm's sales.
GOVERNit-1	Corporate governance score from KLD database.
CAPXit-1	The ratio of capital expenditures (CAPX) to total assets (AT).

Other Variables:

BEST100it	Indicator variable coded as 1 if the firm is listed in Fortune magazine's list of the "100 best companies to work for" in year t.
ENVIRONit-1	Environment score from KLD database.
COMMUNit-1	Community score from KLD database.
EMP_RELit-1	Employee relation score from KLD database.
DIVERSITYit-1	Diversity score from KLD database.
PRODUCTit-1	Product score from KLD database.
RIGHTSit-1	Human rights score from KLD database.
AB_DISCit-1	Discretionary accrual is estimated by using the performance-adjusted modified Jones model suggested in Kothari et al. (2005). We estimate the model for every industry classified by two-digit SIC code for each year and capture the residuals. The absolute value of discretionary accrual, *AB_DISC*, is used as the proxy for financial reporting quality. The large value of the absolute value of discretionary accrual, the lower level of financial reporting quality. We further multiply *AB_DISC* by -1 so that large value of *AB_DISC* indicates higher-quality of financial reporting.
DD_DISCit-1	Discretionary accrual is estimated by using the Dechow and Dichiev (2002) model as modified by McNichols (2002) and Francis et al (2005). We estimate the model for every industry classified by two-digit SIC code for each year and capture the residuals. We then compute the standard deviation of firm i's residuals over the years t-5 to t-1. We further multiply that standard deviation by -1 so that large value indicates higher-quality of financial reporting.(see references?)
INST_INVESTORit-1	Institutional shareholders at the end of year t-1 for firm i.

Appendix 2a: Descriptive Statistics of Selected Variables in Model 1

Variable	N	Mean	Median	Std.Dev	25th Percentile	75th Percentile
NET_HIREit	96,221	0.091	0.028	0.349	-0.050	0.149
SALES_GRit	96,221	0.187	0.078	0.634	-0.032	0.233
SALES_Git-1	96,221	0.256	0.092	0.812	-0.019	0.266
⊿ROAit	96,221	0.004	0.006	0.190	-0.038	0.044
⊿ROAit-1	96,221	-0.000	0.006	0.212	-0.038	0.045
ROAit	96,221	-0.032	0.032	0.258	-0.054	0.083
RETURNit	96,221	0.146	0.002	0.801	-0.294	0.328
SIZEit-1	96,221	5.615	5.524	2.222	3.971	7.138
LIQit-1	96,221	2.121	1.265	2.584	0.770	2.343
⊿LIQit-1	96,221	0.243	-0.000	1.182	-0.208	0.256
⊿LIQit	96,221	0.106	-0.021	0.823	-0.229	0.202
LEVit-1	96,221	0.256	0.195	0.282	0.025	0.378

This table presents the descriptive statistics for the 96,507 firm-year observations over the period between 1991 and 2016. This table presents the number of observations, the mean, the median, the standard deviation, the values for the first and the third quartile for all the variables in Equation 1. The primary estimate of expected net hiring is based on the model of Pinnuck and Lillies (2007). *NET_HIRE* is the percentage change in employee. *SALE_GROWTH* is the percentage change in sale revenue. *ROA* is net income scaled by beginning of the year total asset. *RETURN* is the annual stock return for year t. *SIZE_R* is the log of market value of equity at the beginning of the year, ranked into percentiles. *LIQ* is the ratio of cash and short-term investments plus receivables to current liabilities. *LEV* is the ratio of long term debt to total assets at the beginning of the year.

Appendix 2b. Regression Reults (Dependent Variable = *NET_HIRE*)

	Expected Sign	***Coefficient (t-stat)***
SALESGROWTHit	+	0.2157***
		(46.87)
SALESGROWTHit-1	+	0.0255***
		(10.66)
ROAit	+	0.1474***
		(17.68)
⊿*ROAit*	-	-0.2384***
		(-23.52)
⊿*ROAit-1*	+	0.0407***
		(4.95)
RETURNit	+	0.0414***
		(22.94)
SIZE_Pit-1	+	0.0478***
		(10.85)
LIQit-1	+	0.0069***
		(10.76)
⊿*LIQit*	+/-	-0.0089***
		(-4.33)
⊿*LIQit-1*	+	0.0225***
		(14.63)
LEVit-1	+/-	-0.0101*
		(-1.91)
LOSSBIN1it-1	-	-0.0230***
		(-2.96)
LOSSBIN2it-1	-	-0.0386***
		(-5.37)
LOSSBIN3it-1	-	-0.0312***
		(-3.75)
LOSSBIN4it-1	-	-0.0262***
		(-3.16)
LOSSBIN5it-1	-	-0.0365***
		(-4.34)
Industry Fixed Effect		Yes
N		96,211
Adjusted R2		21.4%

This table presents the results from regressing the percentage change in employees on variables capturing underlying economic fundamentals over the period between 1991 and 2016. t-statistics are calculated using Newey-West corrected standard errors. *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels.

Appendix 3: Instrumental variable robustness test of model 2 and 3.

	First Stage	***Second Stage***	***First Stage***	***Second Stage***	***First Stage***	***Second Stage***	***First Stage***	***Second Stage***	***First Stage***	***Second Stage***
	(1) EMP_ TREAT	***(1) /AB_NETHIRE/***	***(2) EMP_ TREAT***	***(2) SALES***	***(3) EMP_ TREAT***	***(3) NET INCOME***	***(4) EMP_ TREAT***	***(4) GPROFIT***	***(4) EMP_ TREAT***	***(4) ROA***
EMP_TREATit		-0.0325***		-0.0137		0.1205***		0.0368*		0.0015
		(-3.00)		(-0.80)		(2.79)		(1.66)		(0.36)
AB_NETHIREit-1				-0.1067***		-0.1490***		-0.0793*		-0.0390***
				(-3.08)		(-2.06)		(-1.95)		(-3.20)
EMP_TREAT_ STATEit	0.7804***		0.7901***		0.8233***		0.7954***		0.7901***	
	(11.70)		(16.20)		(15.82)		(16.28)		(16.20)	
EMP_TREAT_ NDUSTRYit	0.7931***		0.6926***		0.6875***		0.6933***		0.6925***	
	(10.80)		(13.59)		(12.42)		(13.53)		(13.59)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	15,520	15,520	11,292	11,292	9272	9272	11,063	11,063	11,292	11,292
Adjusted R2	50.7%	34.7%	56.2%	94.5%	56.9%	81.7%	55.6%	94.0%	56.2%	56.2%
First-stage Cragg and Donald Test p-value	< 0.001		< 0.001		<0.001		< 0.001		< 0.001	
Overidentification Test p-value		0.866		0.959		0.116		0.908		0.693

This table presents the results from instrumental variable regressions that control for the the endogeneity of employee treatment. We employ two instruments: (1) the mean of the employee treatment score of firms having headquarters located in the same state (*EMP_TREAT_STATE*) and (2) the mean of the employee treatment score in year t of all firms belonging to firm i's 2-digit SIC code (*EMP_TREAT_INDUSTRY*). Section (1) presents the 2SLS estimation results for Model 2 of the study to test the relationship between employee treatment (*EMP_TREAT*) and abnormal net hiring (*AB_NETHIRE*). Section (2) to Section (5) present the 2SLS estimation results for Model 3 of the study to test the impact of employee treatment (*EMP_TREAT*) and abnormal net hiring (*AB_NETHIRE*) on various employee productivity and profitability measures (*SALES, NETINCOME, GPROFIT and ROA*).
*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.001 levels. All test statistics and significance level are calculated based on the standard error adjusted by a one-dimensional cluster at the firm level.